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ABSTRACT

The paper reviews research on severe and profound hearing loss and notes implications for hearing impaired students of instrumental enrichment (IE), a cognitive learning approach featuring metacognition. The development of IE by R. Feuerstein is traced to initial work with disadvantaged groups who emigrated to Israel. Noted are such characteristics of IE as bridging exercises to promote transfer of skills to real life situations and content-free materials. IE goals are listed, including correcting deficient cognitive functions, developing motivation to work on a task because of the nature of the task and its mastery, and helping slow performers change attitudes toward themselves. A functional listing of program characteristics developed by R. Feuerstein is appended as is a brief description of the application of the model at Gallaudet College. A seven-page reference list concludes the document. (CL)

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THE CHALLENGE TO CONVENTIONAL ASSESSMENT AND TEACHING METHODS OF HEARING IMPAIRED LEARNERS BY REUVEN FEUERSTEIN'S THEORY AND THE LEARNING POTENTIAL ASSESSMENT DEVICE

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DRAFT

REVIEW OF THE LITERATURE

The cornerstone of learning is the development of cognitive processes. It is these cognitive processes that conventional assessment and teaching methods and the non-conventional methodology of Feuerstein address. The ability to store and retrieve information, identify sequences, solve problems, set goals, adapt, think, perceive and conceptualize from alternative viewpoints are basic to understanding. The impact of a severe and profound hearing loss on the development of cognitive processes greatly affects learning rate (Bonvillian et. al., 1973; Conrad, 1972; Pollard, 1982; Swisher, 1976), style ('Browman, 1980; Bryden, 1963; Fiebert, 1967; Kelly, 1978), perception (Conrad, 1965; Day, 1981; Fromkin, 1980; Furth, 1961, 1964, 1966, 1971), and memory (Frunkin and Amisfeld, 1977; Lichtenstein, 1984).

Furth believes that reality is grasped through logical conceptual thinking and can be accomplished without oral language (1966) provided appropriate strategies are applied for learning (1973, 1965). Furth, in articles with Milgram (1965) and Youniss (1965; 1971) compares and contrasts the language experiences of hearing and deaf children and adolescents and concludes that deafness produces distortions in symbolic or language acquisition that ~~is~~ are difficult to overcome.

The cognitive training strategies that were developed for the learning disabled were modeled from theories developed from the hearing population (Myklebust, 1960; Quigley and Kretschmer, 1982). Cognitive training emerged during the 1960's in special education when cognitive behavior modification, a term adapted from a Watson and Skinner concept, was used to promote self-control, self-reinforcement or some other internalized

through outside training change in behavior. These cognitive intervention programs had varying success, depending on the appropriateness of the strategy (Feuerstein, 1954, 1969, 1970, 1984; Krug, 1965; Mindel and McCay, 1971). These theory based training models were applied to hearing and deaf populations. The comparisons between hearing and non-hearing groups based on models developed on hearing populations abound in the literature (Arnold, 1979; Ceuerstein, 1968, 1969, 1980; Hatfield, 1978; Heinick, 1966; Martin, Rohr-Redding and Innes, 1983; McGill-Franzen and Gormley, 1980; Meirhenry, 1965; Moores, 1978). These comparisons invariably depicted the hearing disabled as functioning intellectually on a low level. Most recently authors have merely noted differences in cognitive functioning levels in a non-judgmental way rather than imply or state cognitive deficits as evidence of inferior intelligence in the hearing disabled (Vernon, 1968).

Teaching/learning strategies reflected compensation for hearing loss. Through multimodel teaching (Brooks, et. al., 1981) and learning (Ewoldt, 1981) now most visible with widespread computer usage (Culberson, 1974; Dugdale, 1978; Fulton, 1983; Grossman, 1983; Harding, 1982; Hazan, 1982; Stoker, 1983; Storm, 1983; and file communications adaptations (Johnston, 1982; Kelly, 1980; Ofiesh, 1983; Prokes, 1980; Propp, 1978; Ray, 1972; Stuckless, 1978; Thayn, 1078), these cognitive training strategies were implemented with hearing impaired students who were trained in total communication or manual communication or oral communication. Each communication system has proponents and opponents who philosophically differ on how and where training for the hearing impaired should begin. The methods, philosophies and results have been highlighted by Arnold (1984); Bellugi, Klima and Siple (1975); Bellugi and Siple (1974); Gaines (1980); Hoeman (1976, 1978); Holmes and Holmes (1980); Jensema and Trybus (1975); Jonas (1979); Jordan (1979); Klima and Bellugi (1979); Kluwin and Kluwin

(1983); Newkirk et. al. (1980); Saleh (1965); Sewell (1971); and White and Stevenson (1975).

It is within this context of philosophical and practical differences on theoretical models and applications of assessment, intervention and communication styles and strategies that a new approach is being tried.

INSTRUMENTAL ENRICHMENT

Reuven Feuerstein, one of Piaget's students, developed a mediated learning experience known as Instrumental Enrichment as an assessment intervention assessment (pre-test, intervene, post-test) model for disadvantaged groups who emigrated to Isreal (Feuerstein, 1954, 1957, 1958, 1963, 1970, 1971, 1972, 1973, 1976).

Jonas and Martin (1984) provide an indication of Instrumental Enrichment in light of other cognitive needs. Instrumental enrichment uses a "metacognition" in that students can reflect on their thinking processes.

Unlike cognitive training programs that focus on impulsivity as a personality characteristic, Feuerstein's theory assumes that impulsivity is a characteristic of the "retarded performer" true to his lack of adequate mediated learning experience. Thus, Instrumental Enrichment assumes that impulsivity may be reduced or limited for a different reason than the other programs.

Instrumental Enrichment develops prerequisites for learning and does not assume that those prerequisites already exist in the learner.

Instrumental Enrichment recognizes the age-specificity of developing generalizable cognitive strategies. Instrumental Enrichment does not assume that generalization will automatically occur. A "bridging" exercise is done daily in which the teacher overtly and actively promotes transfer by the student of skills to real life situations. This activity occurs during group discussion for insight and requires specific teacher training.

The goals of Instrumental Enrichment are:

1. to correct deficient cognitive functions such as:
   a. improving performance in spatial relations
   b. improving performance in abstract analogies,
   c. improving the ability to use more than one rule to solve a problem,
   d. Fostering more systematic approaches to problem solving,
   e. Fostering more accurate reading and following of directions,
   f. Better use of appropriate language for planning and sequencing events.
2. To develop motivation to work on a task because of the nature of the task and its mastery.
3. To produce insight and understanding of one's own thought processes, and the underlying reasons for success and failure.
4. To create both an intrinsic need system and proper work habits so that the use of acquired operations, techniques, strategies and processes will be spontaneous and automatic.
5. To help the slow performer change his attitude toward himself as a passive recipient and reproducer to that of an activity generator of information, with the ability to infer and reach proper conclusions.

Feuerstein (1980) providers an excellent overview of the goals and structure of Instrumental Enrichment in chapter six.

The major goal of Instrumental Enrichment is to increase the person's capacity to learn. The subgoals outlined by Feuerstein (1980) are:

1. The correction of cognitive deficits of the culturally deprived person.
2. The acquisition of "...concepts, labels, vocabulary, operations, and relationships necessary for Instrumental Enrichment..." (Feuerstein, 1980, p. 115).
3. Intrinsic motivation through habit formation.
4. Reflective, insightful processes.
5. Task-intrinsic motivation.
6. Self perception as an idea generator.

The characteristics of Instrumental Enrichment are the structured nature of the material, the instrumental nature of the material and the content-free nature of the material. The material is structured in units or instruments that each address a cognitive function. The Learning Potential Assessment Device identifies those cognitive functions that are deficient. The materials are viewed as a means to achieve a solid cognitive structure. The materials are content free, as much as possible. The content free material facilitate cognitive development.

The learner, teacher, previous failures and materials used may inhibit learning. According to Feuerstein and others (1967, 1972, 1974, 1977, 1981' the students resistance to reflective behaviors that are necessary for organizing, elaborating and analyzing are characteristic of the "action addict" who is accustomed to very concrete operations. This characteristic is marked by impulsivity and inattentiveness. The material must be content free to be useful in developing cognitive structures, the teacher's role, in the Instrumental Enrichment model, is to encourage and reinforce operational thinking in the deprived person. Therefore, conventional time/material covered efficiency mind sets are not appropriate. The teacher is trained to use the materials prepared by Feuerstein in the recommended sequence. Previous attempts (1957) to have the teacher design materials failed. When all forms of resistance are removed, remarkable strides in learning occur. The case histories described by Feuerstein are impressive. In the Appendix of Instrumental Enrichment Feuerstein (1980) provides a functional listing of program characteristics which follows.

APPENDIX:

CHARACTERISTICS OF THE FEUERSTEIN INSTRUMENTAL ENRICHMENT PROGRAM

Program Characteristics	Instrumental Enrichment Program
General goal:	To render the culturally deprived retarded performer more modifiable in his direct exposure to sources of stimuli and in his encounters with academic and life experiences.
Specific subgoals:	Correction of deficient cognitive functions. Acquisition of vocabulary, labels, concepts, operations, and relationships relevant to program. Formation of habits. Production of intrinsic motivation. Creation of insight and reflective thinking. Shift from role of passive recipient and reproducer of information to role of active generator of new information.
Target population: Age:	Ages 11-12 to adulthood for culturally deprived. Ages 9 to adulthood for normal with specific problems.
Level of functioning:	40 IQ to 90 IQ for culturally deprived. Certain learning disabilities for normal Certain cognitive deficiencies or gifted.
Minimal abilities:	Accessible to verbal or other kinds of information. Minimal visual-motor functioning. Accessible to training in elementary graphic activity to be used in paper-and-pencil exercises.
Scholastic achievement:	Irrelevant for application. Many instruments accessible to illiterates.
Types of motivation:	Task-intrinsic. Socially reinforced through peer and teacher interaction. Accessible for many scholastically unmotivated children. Appropriate for inhibited young adults who are not willing to accept regression to low level required for acquisition of basic school skills.

Program Characteristics	Instrumental Enrichment Program
Etiology and pathological entity:	Culturally and socially disadvantaged retarded performers. The culturally different. Educable mentally retarded. Retarded functioning with organic or genetic substrata. Unorganized, unmotivated normal individuals who require the acquisition of work habits, strategies and insight. Perceptual deficits and learning disabilities. Traumatic, organic syndromes.
Settings:	Classroom; resource room. Individual tutorial setting. Prescriptive remedial setting. Extracurricular setting. Under certain conditions, self-administration.
Teachers:	Especially trained for Instrumental Enrichment. No other formal academic prerequisites essential.
Optimal time framework:	Three to five hours weekly, at spaced intervals.
Scholastic framework:	Complementary to regular curriculum. Complementary to content learning or instruction in basic school subjects and mastery of skills in reading and mathematics for those with learning disabilities. Extracurricular material for settings outside of schools.
Nature of materials:	Paper-and-pencil exercises. Divided into instruments, each of which focuses on a particular cognitive function but addresses others as well.
Rhythm of work:	Contingent upon setting. In classroom, pace regulated by mastery, with individualized attention, as necessary. In tutorial settings, individualized and flexible.
Nature of peer interaction:	Cooperative definition of problem. Participation in divergent proposals for solutions. Group discussions for insightful interpretation of FIE activities, generally, and specific tasks. Peer-assisted interactions.

Program Characteristics	Instrumental Enrichment Program
Interaction with teacher:	Presentation of task; explanation of terms; preparation for independent work; exploration of processes and strategies; orienting; producing insightful, reflective thinking; teaching specific content-related elements necessary for FIE; addressing specific deficient cognitive functions (Chapter 4), the cognitive map (Chapter 5), and the subgoals of the program (Chapter 6); producing motivation by means of reinforcement; initiating peer interaction; and producing bridging to content areas and life at large.
Nature of exercises:	Content-free in that content is not goal per se but a carrier for differential focus on cognitive functions to be corrected, developed, and enhanced.
Nature of activity:	Discovery, learning, and repetitive application in varied situations or relationships, rules, principles, operations, strategies, and other prerequisites of adequate cognitive functioning.
Nature of sequence:	Each instrument graded in difficulty, with tasks becoming progressively more complex in their presentation. Repetition of principles and operations with orientation to rules and strategies in various situations that require investment for solution.
Type of feedback:	Self-corrective devices in some instruments. Teacher assists in exploration of nature of process and in interpretation of micro-changes. Mutual feedback through peer interaction. Self-criticism, with the development of criteria and autonomy.
Reinforcement:	Strong task-intrinsic motivation developed with activity. Teacher's reinforcement directed to creating student understanding of his accomplishments.
Evaluation: Teacher:	Student's efficiency in handling tasks himself. Student's mastery and facilitation of transfer to other, similar tasks, including summary pages. Student's spontaneous use of learned rules and strategies in other subject matter or Instrumental Enrichment materials.

Program Characteristics	Instrumental Enrichment Program
Evaluation, continued	
Child:	Self-evaluation on objective measurable criteria, such as speed, accuracy, positive responses, decrease in impulsivity as evidenced by decrease in erasures, etc.
	Self-evaluation on subjective reports, feedback from teachers and peers, and evaluations of other teachers.
Program:	Cognitive changes; effects on school achievements; effects on adaptation; effect on school attendance; effect on behavior in other classes and in public, communal areas.
Services given to teacher:	Training in theory and practice of FIE; in-service field training and consultation during classroom visits; orientation; workshops after initial training in didactics and implementation. Lectures on the culturally deprived retarded performer, non-intellective factors in the program, etc.
Spill-over effects of program:	
Teacher:	Training and experience with FIE effect changes in teacher's perception of the child; in his evaluation and expectations of the child's modifiability; in his attitude regarding the capacity of the retarded performer; in lessened use of the concrete in favor or more abstract; in process rather than product orientation. Knowledge of cognitive structure may make teacher more sensitive to aspects of teaching necessary for changes in both cognitive and personality structures or dimensions.
Child:	Increased willingness to cope with school material.
	Increased motivation and school attendance.
	Heightened self-image.
Parents:	Exposed to success of the child, parents may modify their levels of expectation and image of the child.
Administrative decisions on program:	Through regular decision-making channels for classroom implementation.
	Teacher, educational counselor, psychologist, or educational supervisor for individual, remedial work or prescriptive teaching.

Program Characteristics	Instrumental Enrichment Program
Budget:	From education funds. Covers the cost of material, training, and in-service supervision and consultation.
Production and distribution of materials used in program:	FIE materials are disseminated only to teachers who have received training. Material is not bound, but distributed to child page by page. Material is protected by international copyright.

APPLICATION OF FEUERSTEIN'S MODEL

Gallaudet - MSSD

A. Jonas and Martin (1984) completed an initial report on a long term matched group study of Instrumental Enrichment applied to MDDS students during the 1982-1983 school year. The researcher goals were those of Feuerstein's model.

The primary goals of Instrumental Enrichment include:

a. improving performance in spatial relationships,

b. improving performance in analogies,

c. improving the ability to use more than one rule to solve a problem,

d. fostering more systematic approaches to problem solving,

e. fostering more accurate reading and following directions,

f. increasing use of appropriate language for planning and sequencing events.

Long term goals are to improve math and reading skills.

After one year the Instrumental Enrichment group's performance on Raven's Progressive Matrices (measures logical and deductive reasoning) was three times higher than the control group. The Instrumental Enrichment group scored higher on Problem-Solving solutions. The Instrumental Enrichment group made gains in work habits and classroom behaviors. Jonas and Martin (like Feuerstein) concluded that:

1. The Instrumental Enrichment program could be beneficial to the hearing impaired, even, if started in late adolescence.

2. Teacher training on content-free cognitive materials is essential for the success of the intervention.

3. Dissemination of the results and replication is appropriate.

GALLAUDET COLLEGE

David Martin used the Instrumental Enrichment Model to develop a pre-service teacher education program at Gallaudet College. Results indicate that cognitive modification using Instrumental Enrichment is possible and desirable to improve the intellectual functioning of hearing impaired teacher candidates. This training allows teachers-to-be to systematically plan and implement their professional responsibilities and better develop the cognitive skills of hearing impaired students.

Research in the application of Feuerstein's Model to the learning disabled continues at Gallaudet College. The initial results of studies on cognitive skill development are impressive. However, more research needs to be conducted. Subsequent literature searches may merely add the Instrumental Enrichment Model to the long list of fashionable trends in special education programming.

REFERENCES

Arnold, P. The Education of the Deaf Child: For Integration or Autonomy? American Annals of the Deaf, 129 (1), 1984, 29-37.

Arnold, P. and Walter, G. Communication and Reasoning Skills of Deaf and Hearing Signers. Perceptual and Motor Skills, 49, 1979, 192-194.

Bellugi, U., Klima, E. and Siple, P. Remembering in Signs. International Jouranl of Cognitive Psychology, 3, 1975, 93-125.

Bellugi, U. and Siple, P. Remembering With and Without Words. In F. Bressen (Ed.), Current Problems in Psycholinguistics, Paris: CNRS, 1974, 215-236.

Bonvillian, J., Charrow, V. and Nelson, K. Psycholinguistic and Educational Implications of Deafness. Human Development, 16, 1973, 321-345.

Braden, J.P. LPAD Applications to Deaf Populations. In D. Martin (Ed.), International Symposium on Cognition, Education and Deafness, 1, Washington: Gallaudet College, 1984, 221-238.

Brooks, R. Hudson, F. and Reisbert, L. The Effectiveness of Unimodal Versus Bimodal Presentations of Material to be Learned by Hearing-Impaired Students. American Annals of the Deaf, 126, 1981, 835-839.

Browman, C. Perceptual Processing: Evidence from Slips of the Ear. In V. Fromkin (Ed.), Errors in Linguistic Performance: Slips of the Tongue, Ear, Pen and Hand, New York: Academic Press, 1980, 213-230.

Bryden, M.P. Ear Preference in Auditory Perception. Journal of Experimental Psychology, 65, 1963, 103-105.

Conrad, R. and Rush, M.L. On the Nature of Short-Term Memory Encoding by the Deaf. Journal of Speech and Hearing Disorders, 30, 1965, 336-343.

Conrad, R. Short-Term Memory in the Deaf: A Test for Speech Coding. British Journal of Psychology, 63 (2), 1972, 173-180.

Culberton, L. CAI - Beneficial Teaching Tool at the Texas School for the Deaf. American Annals of the Deaf, 119, 1974, 34-41.

Day, P. The Expression of Communicative Intention. In H. Helman and R. Wilbur (Eds.), Interpersonal Communication and Deaf People (Working Paper #5). Washington, DC: Gallaudet College, 1981.

Dugdale, S. and Vogel, P. Computer-based Instruction for Hearing Impaired Children in the Classroom. American Annals of the Deaf, 1978, 123 (6).

Ewoldt, C. Factors Which Enable Deaf Readers to Get Meaning from Print. In S. Hudelson (Ed.), Learning to Read in Different Languages, Washington, DC: Center for Applied Linguistics, 1981, 45-53.

Feuerstein, R. The Learing Potential Assessment Device. In B.W. Richards (Ed.) Proceedings of the Ist Congress of the International Association for the Scientific Study of Mental Deficiency. Reigate (Surrey): M. Jackson. 1968, 562-565.

Feuerstein, R. The Instrumental Enrichment Method: An Outline of Theory and Technique. Jerusalem: Hadassah-Wizo-Canada Research Institute, 1969.

Feuerstein, R. A Dynamic Approach to the Causation, Prevention and Alleviation of Retarded Performance. In H.C. Haywood (Ed.) Socio-cultural Aspects of Mental Retardation. Appleton-Century-Crofts: New York, 1970a, 341-377.

Feuerstein, R. Les Differences de Fonctionnement Cognitif dans des Groups Socio-ethniques Differents: Leur Nature, Leur Etiologie et les Prognostics de Modifiabilite. Paris: Dactylo-Sorbonne, 1970b.

Feuerstein, R. Low Functioning Children in Residential and Day Settings for the Deprived. In M. Wolins and M. Gottesman (Ed.s) Group Care: The Israeli Approach. London: Gordon and Breach, 1971, 224-231.

Feuerstein, R. Cognitive Assessment of the Socioculturally Deprived Child and Adolescent. In L. J. Cronbach and P. Drenth (Eds.) Mental Tests and Cultural Adaptation. The Hague: Mouton, 1973a, 265-275.

Feuerstein, R. The Role of Cultural Transmission in the Development of Intelligence. Allan Bronfman Lecture, Quebec, September, 1973b.

Feuerstein, R. Mediated Learning Experience: A Theoretical Basis for Cognitive Human Modifiability During Adolescence. In P. Mittler (Ed.) Research to Practice in Mental Retardation. Vol. 2, Baltimore: Univesity Park Press, 1977.

Feuerstein, R. L'attitude Active Modifiante Envers des Difficultes d'Apprentissage Pare l'Integration et l"Innvation. L'association Quebecoise pore les Enfants ayant des Troubles d'Apprentissage. Montreal: Mars, 1978a.

Feuerstein, R. Ontogeny of Learning. In M. Brazier (Ed.) Brain Mechanisms in Memory and Learning, New York: Raven Press, 1978b.

Feuerstein, R. Instrumental Enrichment. Baltimore: University Park Press, (1980).

Feuerstein, R., and Hoffman, M.B. The Dynamic Assessment of Retarded Performers. The Learning Potential Assessment Device, Theory, Instrument and Techniques, Baltimore: University Park Press, 1979.

Feuerstein, R., Jeannet, M., and Richelle, M. Some Aspects of Intellectual Development in Young North African Jews. Geneva: University of Geneva, 1954.

Feuerstein, R., and Jensen, M.R. Instrumental Enrichment: Theoretical Basis, Goals and Instruments. The Educational Forum, 1980, 401-423.

Feuerstein, R., and Krasilowsky, D. The Treatment Group Technique. The Israel Annals of Psychiatric and Related Disciplines, 1967, 5(1): 69-90.

Feuerstein, R., Krasilowsky, D., and Rand, Y. Innovative Educational Strategies for the Integration of High-risk Adolescents in Israel. Phi Delta Kappan, April, 1974, LV, 8: 1-6.

Feuerstein, R., Miller, R., Hoffman, M.B., Rand, Y., and Jensen, M.R. Cognitive Modifiability in Adolescence. Cognitive Structure and the Effects of Intervention. Journal of Special Education, 15, 1981, 269-287.

Feuerstein, R., Narrol, H., Schacter, E., Schlesinger, I.M., and Shalom, H. Studies in Cognitive Modifiability: The Dynamic Assessment of Retarded Performer. Clinical LPAD Battery. Vol. 1 and 2. Jerusalem: Hadassah-Wizo-Canada Research Institute, 1972.

Feuerstein, R., and Rand, Y. Mediated Learning Experiences: An Outline of the Proximal Etiology for Differential Development of Cognitive Functions. In L. Gold Fein (Ed.) International Understanding: Cultural Differences in the Development of Cognitive Processes, 1974, 7-37.

Feuerstein, R., and Rand, Y. Studies in Cognitive Modifiability: Redevelopment of Cognitive Functions of Retarded Early Adolescents. Instrumental Enrichment. Jerusalem: Hadassah-Wizo-Canada Research Institute, 1977.

Feuerstein, R., and Richelle, M. North African Jewish Children. Tel Aviv: Youth Aliyah, 1957.

Feuerstein, R., and Richelle, M. Perception and Drawing of the North African Jewish Child. Megamot, 1958, 9: 156-162.

Feuerstein, R., and Richelle, M. Children of the Mellah. Jerusalem: Mossad Szold Press, 1963.

Feuerstein, R., Tannenbaum, A.J., Krasilowsky, D., Hoffman, M., and Rand, Y. The Effects of Group Care on the Psychosocial Habilitation of Immigrant Adolescents in Israel. with Special Reference to High Risk Children. International Review of Applied Psychology, 1976, 25.3: 189-201.

Fiebert, M. Cognitive Styles in the Deaf. Perceptual and Motor Skills, 24, 1967, 319-329.

Fromkin, V.A. Errors in Linguistic Performance: Slips of the Tongue, Ear, Pen, and Hand. New York: Academic Press, 1980.

Frumkin, B. and Amisfeld, M. Semantic and Surface Codes in the Memory of Deaf Children. Cognitive Psychology, 9, 1977, 475-493.

Fulton, R., Larson, A., and Worthy, R. The Use of Microcomputer Technology in Assessing and Training Communication Skills of Young Impaired Children. American Annals of the Deaf, 128(5), 1983.

Furth, H. The Influence of Language on the Development of Concept Formation in Deaf Children. Journal of Abnormal and Social Psychology, 63, 1961, 386-389.

Furth, H. Conceptual Performance in Deaf Adults. Journal of Abnormal and Social Psychology, 69, 1964, 676-681.

Furth, H. Research with the Deaf: Implications for the Language and Cognition. Psychological Bulletin, 62, 1964, 145-162.

Furth, H. Thinking Without Language. New York: Free Press, 1966.

Furth, H. Education for Thinking. Journal of Rehabilitation of the Deaf, 5, 1971, 7-71.

Furth, H. Deafness and Learning: A Psychological Approach. Belmont, CA: Wadsworth Publishing Company, 1973.

Furth, H. Linguistic Deficiency and Thinking: Research with Deaf Subjects, 1964-69. Psychological Bulletin, 76, 1971, 58-72.

Furth, H. and Milgram, H. The Influence of Language on Classification: A Theoretical Model Applied to Normal, Retarded and Deaf Children. Genetic Psychology Monographs, 72, 1965, 317-351.

Furth, H.G., and Youniss, J. The Influence of Language and Experience on Discovery and Use of Logical Symbols. British Journal of Psychology, 1965, 56.

Furth, H.G., and Youniss, J. Formal Operation and Language: A Comparison of Deaf and Hearing Adolescents. International Journal of Psychology, 6, 1971, 49-64.

Gaines, S. and Bond, Z. A Slip of the Ear: A Snip of the Ear? A Slip of the Year? In V. Fromkin (Ed.), Errors in Linguistic Performance: Slips of the Tongue, Ear, Pen and Hand. New York: Academic Press, 1980, 231-240.

Grossman, K., Siders, J. and Garraway, H.,III. A Microcomputer Application for the Teaching of Sign Language. American Annals of the Deaf, 1983, 128(5).

Harding, R.E., Ricball, L.K. A National Microcomputer-Software Survey of Current Microcomputer Usage in Schools for the Hearing-Impaired. American Annals of the Deaf, 127(5), 1982, 673-683.

Hatfield, N., Caccamise, F. and Siple, P. Deaf Students' Language Competence: A Bilingual Perspective. American Annals of the Deaf, 123, 1978, 847-851.

Hazan, P. Personal Computing to Aid the Handicapped. The Johns Hopkins National Search: New Horizons. American Annals of the Deaf, 1982, 127(5).

Heinick, R. Application of Systems Concepts to Instruction. American Annals of The Deaf, 1966, 111(5).

Hoeman, H. The Transparency of Meaning of Sign Language Gestures. Sign Language Studies, 7, 1976, 151-161.

Hoeman, H. Categorical Coding of Sign and English in Short-term Memory by Deaf and Hearing Subjects. In Understanding Language Through Sign Language Research, New York: Academic Press, 1978, 289-304.

Holmes, K.M., and Holmes, D.W. Signed and Spoken Language Development in a Hearing Impaired Child of Hearing Parents. Sign Language Studies, 28, 1980, 239-254.

Hulfish, S. Relationship of Role Identification, Self-esteem and Intelligence to Sex Differences in Field Independence. Perceptions and Motor Skills, 47, 1978, 835-842.

Jensema, C. The Relationship Between Academic Achievement and the Demographic Characteristics of Hearing-Impaired Children and Youth. Washington, D.C.: Gallaudet College Office of Demographic Studies, 1975.

Jensema, C., and Trybus, R.J. Communication Patterns and Educational Achievement of Hearing-Impaired Students. Washington, D.C.: Gallaudet College Office of Demographic Studies, 1978.

Johnston, D. DEAFSIGN: A Series of Computerized Instructional Programs for the Teaching of Sign Language. American Annals of the Deaf, 127(5), 1982.

Jonas, B., and Martin, D. Cognitive Improvement of Hearing-Impaired High School Students Through Instruction (539-560). In Instrumental Enrichment, in D. Martin, (Ed.) International Symposium on Cognition, Education and Deafness, Working Papers, II, Washington, D.C.: Gallaudet College Press, 1984.

Jonas, P. Negative Interference of Signed Language in Written English. Sign Language Studies, 24, 1979, 273-279.

Jordan, I.K., Gustason, G. and Rosen, R. An Update on Communication Trends at Programs for the Deaf. American Annals of the Deaf, 124, 1979, 350-357.

Keane, K.J. Application of Feuerstein's Mediated Learning Construct to Deaf Persons. In Martin, D. (Ed.), International Symposium on Cognition, Education and Deafness, Vol. I, Washington, D.C.: Gallaudet College Press, 1984, 207-220.

Kelly, R. Hemispheric Specialization of Deaf Children: Are There any Implications for Instruction? American Annals of the Deaf, 1978, 123(6).

Kelly, R. The Evaluation Program and Nationwide Field Test Effort of the Media Development Project for the Hearing Impaired. American Annals of the Deaf, 1980, 125(6).

Klima, E and Bellugi, U. The Signs of Language. Cambridge: Harvard University Press, 1979.

Kluwin, T. and Kluwin, B. Simultaneous Communication in Classrooms for Hearing Impaired Students. American Annals of the Deaf, 128(7), 1983.

Krug, R. An Approach to Teaching Language to Young Deaf Children. American Annals of the Deaf, 110(5), 1965.

Lichtenstein, E.H. Deaf Working Memory Processes and English Language Skills. In D. Martin (Ed.), International Symposium on Cognition, Education and Deafness: Trends in Research and Instruction. Washington, D.C.: Gallaudet College Press, 1984.

Luetke-Stahlman, B. Adapting Bilingual Instructional Models for Hearing-Impaired Classrooms. American Annals of the Deaf. 128(2), 1983, 873-877.

Martin, D., Rohr-Redding, C. and Innes, J. Teaching Thinking Skills to the Hearing Impaired Adolescent. Directions, 1983.

McGill-Franzen, A. and Gormley, K. The Influence of Context of Deaf Readers' Understanding of Passive Sentences. American Annals of the Deaf, 125, 1980, 937-942.

Meirhenry, W. Implications of Learning Theory for Education of the Hearing Impaired. American Annals of the Deaf. 1965, 110(5).

Mindel, Eugene D., and McCay, Vernon. They Grow in Silence. Silver Spring Association of the Deaf, 1971.

Moores, D.F. Educating the Deaf: Psychology, Principles and Practices. Boston: Houghton Mifflin Company, 1978.

Myklebust, H. The Psychology of Deafness. New York: Grune and Stratton, 1960.

Newkirk, D., Klima, E., Pederson, C., and Bellugi, V. Linguistic Evidence from Slips of the Hand. In V. Fromkin (Ed.), Errors in Linguistic Performance: Slips of the Tongue, Ear, Pen and Hand. New York: Academic Press, 1980, 165-197.

Ofiesh, G. The Potential of Television for Teaching the Deaf. American Annals of the Deaf, 128(5), 1983.

Pollard, G. and Shaw, C.C. Microcomputer Reading Comprehension Improvement Program for the Deaf. American Annals of the Deaf, 127(5), 1982.

Prokes, L. The Use of Media in a Diagnostic Prescriptive Model for Educating Deaf Multihandicapped Students. American Annals of the Deaf, 1980, 125(6).

Propp, G. An Overview of Progress in Utilization of Educational Technology for Educating the Hearing Impaired. American Annals of the Deaf, 1978, 123(6).

Pschirrer, L. Using Imagery to Teach Independent Pronunciation Skills to Deaf College Students. American Annals of the Deaf, 1980, 125(6).

Quigley, S. and Kretschmer, R. The Education of Deaf Children: Issues, Theory and Practice. Baltimore: University Park Press, 1982.

Ray, H. Media and Affective Learning. American Annals of the Deaf, 1972, 117(5).

Saleh, H. Sights and Sounds: An Auditory Training Program for Young Deaf Children. American Annals of the Deaf, 1965, 110(5).

Sewell, H.R. Specialized Methods for Teaching Communication Skills. American Annals of the Deaf, 1971, 116(5).

Stoker, R. A Computer-Assisted Diagnostic and Prescriptive Tool for Use in Teaching Speech to the Deaf. American Annals of the Deaf, 1983, 128(5).

Storm, R. A Model for the Implementation of Microcomputers into a Program for the Hearing Impaired. American Annals of the Deaf, 1983, 128(5).

Stuckless, E.R. Technology and the Visual Processing of Verbal Information by Deaf People. American Annals of the Deaf, 1978, 123(6).

Swisher, L. The Language Performance of the Oral Deaf. In Studies in Neurolinguistics (Vol. 2). New York: Academic Press, Inc., 1976.

Thayn, P. Applying Media and Technology in the Development of Communication Skills for the Deaf. American Annals of the Deaf, 1978, 123(6).

White, A and Stevenson, V. The Effects of Total Communication, Manual Communication, Oral Communication and Reading on the Learning of Factual Information in Residential School Deaf Children. American Annals of the Deaf, 120, 1975, 48-57.

Vernon, M. Fifty Years of Research on the Intelligence of Deaf and Hard of Hearing Children: A Review of Literature and Discussion of Implications. Journal of Rehabilitation of the Deaf, 1(4), 1968, 1-12.